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ABSTRACT

This study explores the role of the language learning situation by comparing the speech of children in an immersion program, children learning a second language in a natural setting, and native French children. Three groups of children participated in the study: (1) 39 children (Grades K, 1, 3, 5) in a French immersion program in the U.S.; (2) 13 English-speaking children attending French schools in France; and (3) 10 French children attending French schools in France. Results of a storytelling test indicate that children in the non-native groups performed more like each other than like the native speakers, who generally performed best on most measures. Further, the naturalistic group performed extremely well after only one year's contact with the second language, outperforming the other non-native groups on pronunciation and vocabulary ratings. They excelled in aspects of language learning that were different from the immersion students. Grade 5 performed best of the non-native groups on a number of measures. These findings suggest that different language learning situations may hold different advantages for the learner. (Author/AMH)

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The Importance of the Language-Learning Situation:
Is 'Immersion' the Same as the 'Sink or Swim' Method?

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Recent studies of the speech of French immersion students in Canada seem to focus on the non-nativeness of the speech of these students. Selinker, Swain & Dumas (1975) have described French immersion speech in terms of an "interlanguage" framework. Furthermore, Harley & Swain (1978) have contrasted the simplified verb system of French immersion children with the verb system of native French-speaking children.

It is the purpose of this paper to examine the performance of a group of children learning French in a naturalistic setting, a group of children learning French in an immersion setting and a group of French native speakers in order to compare:

- 1) the speech produced by the native and non-native groups
- 2) the speech of the two non-native groups, who are learning their second language in two different environments.

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Sample Population:

This paper will compare the oral speech production of three groups:

- 1) 39 children enrolled in the French American Bilingual School (FABS) in San Francisco, California, in Grades K, 1, 3, 5 (designated as the Immersion groups).
- 2) 13 English-speaking children attending French schools in and around Paris, France (designated as the Naturalistic group).
- 3) 10 French children attending French schools in and around Paris, France (designated as the French Comparison group).

The immersion situation described here is quite similar to that in Canada. The subjects all enter school in kindergarten, where all instruction is in French and the teachers are native speakers of French from France. In each subsequent grade level, about 40 minutes of English instruction per day is added to the curriculum until the school day is half in French and half in English. The children study French language arts and English language arts, and other subjects are divided approximately evenly between French and English as the medium of instruction. It is also important to note here that though English language arts are introduced in Grade 1, the children learned to read first in French in Grade 1, and later in English.

We might divide the children who attend FABS into three groups:

- (1) monolingual English speakers of a relatively high socioeconomic

status whose parents want them to learn French, (2) children somehow connected with the "international" community or the French community (e.g. children with one French parent or French children), (3) children from the neighborhood in which the school is located, who are participating in a special scholarship program: Black children who are of a slightly lower SES than the other two groups. The first group constitutes the majority of the school population. The other two groups are approximately evenly distributed among the classes and are rare (two or three children from each group in each class).²

The children in Grades 1, 3, and 5 represent an "extension" of the kindergarten students in terms of language contact in that they entered school at kindergarten and might be representative of those same kindergarteners after one, three, and five more years in the school.

The Naturalistic group consists of 13 native English-speaking children ages 6 to 11 (an age range comparable to that of the Immersion group) who had been living in and around Paris for 9 to 12 months at the time of testing and who had been learning French during their stay in France with little or no formal instruction.³ The children attended French schools, and were often the only Americans in their class, sometimes in the whole school.

The French Comparison group consists of 10 French children of the same age range, geographic area, and socioeconomic background as the

Naturalistic group. Some of the French children were classmates and friends of the children in the Naturalistic group.

It is important to note here that the different L2 groups are not comparable in terms of age and exposure to the second language. The Immersion groups each consist of a number of children at a particular grade level and are thus homogeneous in age (ages 5, 6, 8, 10 in Grades K, 1, 3, and 5 respectively). The Naturalistic group as well as the French native group consist of children of mixed ages but within the same age range as the Immersion groups (ages 6 to 11), distributed about equally within that age range. Furthermore, the Naturalistic group is generally uniform in terms of their exposure to the second language (all children had had approximately one year's contact with the second language at the time of testing), whereas the Immersion groups had all been exposed to the L2 to varying degrees. (Though each Immersion group in itself is homogeneous in amount of exposure to the L2: Grade K--1 year, Grade 1--2 years, Grade 3--4 years, Grade 5--6 years). Thus, the Naturalistic and K groups are alike in terms of amount of exposure but not age. The Naturalistic and French Comparison groups are alike in terms of age. And each of the Immersion groups is alike in terms of language background, but differs in age and amount of exposure.

For purposes of this paper, the Immersion groups are used as reference groups but are not intended to be interpreted as controlled experimental groups. This paper is a post hoc comparison of the speech

of several groups of native and non-native speakers who are similar in many ways, and not a report of a controlled experiment.

Methodology & Procedure:

The findings presented here are based on an analysis of the results of a storytelling test administered in the late Spring (Immersion group) and early Summer (Naturalistic and French Comparison groups) of the academic year. This means that the Kindergarten and Naturalistic groups had had slightly less than one academic year of contact with the second language at the time of testing. The children in Grades 1, 3, and 5 had had an additional one, three, and five years of contact, respectively.

The storytelling test consists of a set of photographs⁴ about which the subjects were asked to tell a story. The subjects were all interviewed individually; the Immersion children at school, the Naturalistic and Comparison groups at home. The sessions were taped and transcribed. The interviewer told a model story about one photograph and then the children were asked to tell a story about each of the other photographs. The photographs were chosen to elicit a wide variety of vocabulary from different domains (home, school, shopping, street, etc.), and also to insure the inclusion of particular structures (e.g. reflexive verbs).

The subjects were compared on a number of subjective as well as objective measures. The measures were chosen first of all to provide

some basis for comparison between groups, and secondly to show some sort of developmental index.⁵ Group scores are given for the following measures:

- 1) Number of Utterances is the total passage length, the number of utterances the subject used to describe all three photos. Utterances were determined by sentence final intonation and logical thought breaks.⁶
- 2) Words/Utterance is the mean number of words used per utterance by each group and is analogous to MLU or sentence length, in terms of a developmental index.
- 3) Verbs/Utterance is the mean number of verbs used per utterance by each group and is intended to provide an index of utterance complexity, the idea being that the more verbs used per utterance, the more complex the utterance.
- 4) Verbs/Words is a type-token ratio aimed at describing the overall proportion of verbs used to total number of words in a passage.⁷
- 5) Different Verbs/Total Verbs is intended to serve as an index of richness of vocabulary: the number of different verbs used in proportion to the overall number of verbs in a passage.
- 6) Errors/Utterance is the proportion of grammatical and vocabulary errors per utterance for the different groups. Pronunciation

errors were not included unless they changed the semantics, morphology or syntax of the utterance.

- 7-10) Native speaker ratings: Each passage was rated by a native speaker for grammaticality, vocabulary, fluency and pronunciation. The native speaker rated each subject (passage) on a scale of 1 to 4, 1 being very bad (almost unintelligible) and 4 being very good (native speaker-like).

Table 1 shows the size of the different groups⁸ and provides means and standard deviations for the different groups on the various measures (dependent variables).

At this point, it might be useful to note that, not only is there a high standard deviation for many of the groups, but there is also a big difference in the standard deviations for different measures between groups. The groups do not always demonstrate homogeneity of variance.⁹ For this reason a traditional analysis of variance cannot be meaningfully applied to these data. Instead, the data were subjected to a Kruskal-Wallis one-way analysis of variance, which ranks the scores and compares the mean ranks of the different groups. This means that we are now dealing with median scores instead of mean scores. Table 3 shows median scores for each group by dependent variable. In fact, the median scores are probably much more representative of the overall group trends. Table 2 provides comparison of the mean and median scores on one dependent variable (Number of Utterances). You

Table 1

MEANS AND STANDARD DEVIATIONS FOR DEPENDENT VARIABLES BY GROUP

		Number of Utterances	Words/ Utterance	Verbs/ Utterance	Verbs/ Words	Different Verbs/ Total Verbs	Errors/ Utterance	Grammar Rating	Vocabulary Rating	Fluency Rating	Pronunciation Rating
Immersion Grade K (n = 9)	Mean	14.11	5.68	.68	.11	.74	1.24	2.50**	2.89	2.67	3.00
	Standard Deviation	6.09	1.39	.38	.06	.23	.52	.93	1.17	1.00	.71
Immersion Grade 1 (n = 10)	Mean	14.20	6.61	1.08	.16	.67	.86	2.71*	3.29*	3.13**	3.38**
	Standard Deviation	6.09	1.66	.31	.02	.19	.28	.49	.49	.35	.52
Immersion Grade 3 (n = 7)	Mean	13.57	8.19	1.48	.18	.69	1.75	2.43	3.14	3.14	3.29
	Standard Deviation	6.19	.49	.18	.01	.09	.66	.53	.69	.69	.49
Immersion Grade 5 (n = 13)	Mean	15.92	8.80	1.45	.16	.59	1.21	2.83***	3.42***	3.67***	3.42***
	Standard Deviation	6.96	1.14	.27	.02	.14	.26	.58	.51	.49	.51
Naturalistic Group (n = 13)	Mean	14.85	6.41	1.11	.16	.66	.98	2.69	3.38	3.38	3.46
	Standard Deviation	4.76	1.10	.22	.03	.17	.40	.63	.65	.65	.52
French Comparison Group (n = 10)	Mean	11.90	7.03	1.17	.17	.75	.22	3.80	4.00	3.90	4.06
	Standard Deviation	2.08	1.29	.28	.03	.13	.12	.42	.00	.32	.00

*n = 7

**n = 8

***n = 12

Table 2
NUMBER OF UTTERANCES

Group	Range	Mean (S.D.)	Mean Rank	Median	Median Rank
Immersion Grade K	7-29	14.11 (6.09)	3	13.25	4
Immersion Grade 1	7-27	14.20 (6.09)	4	13.17	3
Immersion Grade 3	9-25	13.57 (6.19)	2	11.00	1
Immersion Grade 5	9-34	15.92 (6.96)	6	13.33	5
Naturalistic Group	7-27	14.85 (4.76)	5	14.63	6
French Comparison Group	9-11	11.90 (2.08)	1	11.25	2

Table 3
MEDIAN SCORES ON DEPENDENT VARIABLES BY GROUP

	Number of Utterances	Words/ Utterance	Verbs/ Utterance	Verbs/ Words	Different Verbs/ Total Verbs	Errors/ Utterance	Grammar Rating	Vocabulary Rating	Fluency Rating	Pronunciation Rating
Immersion Grade K (n = 9)	13.25	5.75	.64	.12	.71	1.42	2.50**	3.00	2.67	3.00
Immersion Grade 1 (n = 10)	13.17	6.71	1.09	.17	.70	.80	2.80*	3.20*	3.07**	3.30**
Immersion Grade 3 (n = 7)	11.00	8.26	1.44	.13	.70	1.64	2.38	3.13	3.13	3.20
Immersion Grade 5 (n = 13)	13.33	8.57	1.40	.16	.58	1.20	2.88***	3.36***	3.75***	3.36***
Naturalistic Group (n = 13)	14.63	6.67	1.11	.17	.63	.89	2.71	3.42	3.42	3.43
French Comparison Group (n = 10)	11.25	7.01	1.19	.17	.78	.21	3.88	4.00	3.94	4.00

*n = 7
**n = 8
***n = 12

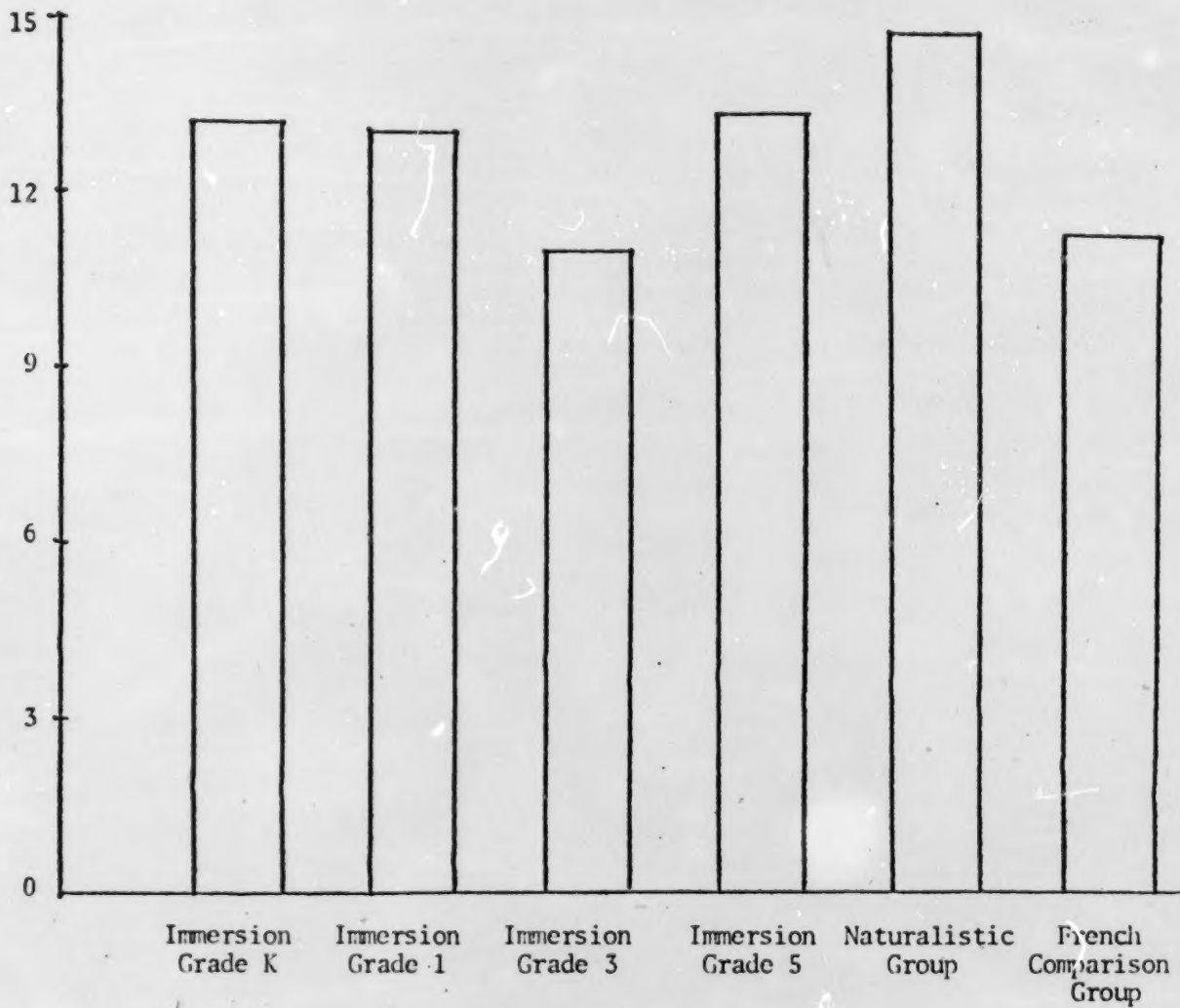
will note that the range of scores is quite wide for the different groups (e.g. 7 to 29 for kindergarten, 9 to 34 for Grade 5), whereas most of the scores are clustered near the mid-point of that range and only one subject scored 29 and 34, respectively. Since the arithmetic mean is much more sensitive to this type of extreme score, the median is probably a better measure of central tendency for these data. Notice that though using median scores instead of means does affect the ranks of the different groups, the ranks by the two different methods never differ by more than one.

Let us, then, examine the performance of the different groups on each measure (dependent variable) in order to get an idea of overall group trends. The following graphs (Figures 1-10) represent group median scores by dependent variable.

Figure 1: Number of Utterances

The groups all performed similarly in terms of the number of utterances they used in telling stories. That is, there were no statistically significant differences between groups on this variable ($p \leq .52$). The Naturalistic group uses the most utterances per passage. This may be because this group had been tested three times during the course of the academic year. Since this was the third testing using this test, the subjects were more familiar with the test procedure and quite at ease in the test situation. Both

Figure 1: Utterances



$p \leq .515$

the French Comparison group and Grade 3 produced fewer overall utterances. For the French Comparison group, this may have been due to their unfamiliarity with the test and interviewer. Though the Immersion children were only tested once on this particular test, they were familiar with the interviewer from other test sessions. There is no obvious explanation for the slightly lower scores of Grade 3 on this particular variable, however, Grade 3 is the smallest group of children and they tend to score slightly lower on several of the variables.

Figure 2: Words/Utterance

Not all groups perform similarly on this variable ($p \leq .001$). Though Grade 5 scores highest on this variable, Grade 3 and the French Comparison group also score quite close to Grade 5. That is, Grade 5 performs best, but not much better than Grade 3 and the French Comparison group, who also do quite well. The Naturalistic group and Grades K and 1, however, all use much shorter utterances in their storytelling passages.¹⁰

Figure 3: Verbs/Utterance

Again, the groups do not seem to be similar in their performance on this variable ($p \leq .001$). This time it is the kindergarteners who score the lowest (who have the least complex utterances) and Grades 3 and 5 who have the highest scores. It is somewhat surprising, perhaps,

Figure 2: Words/Utterance

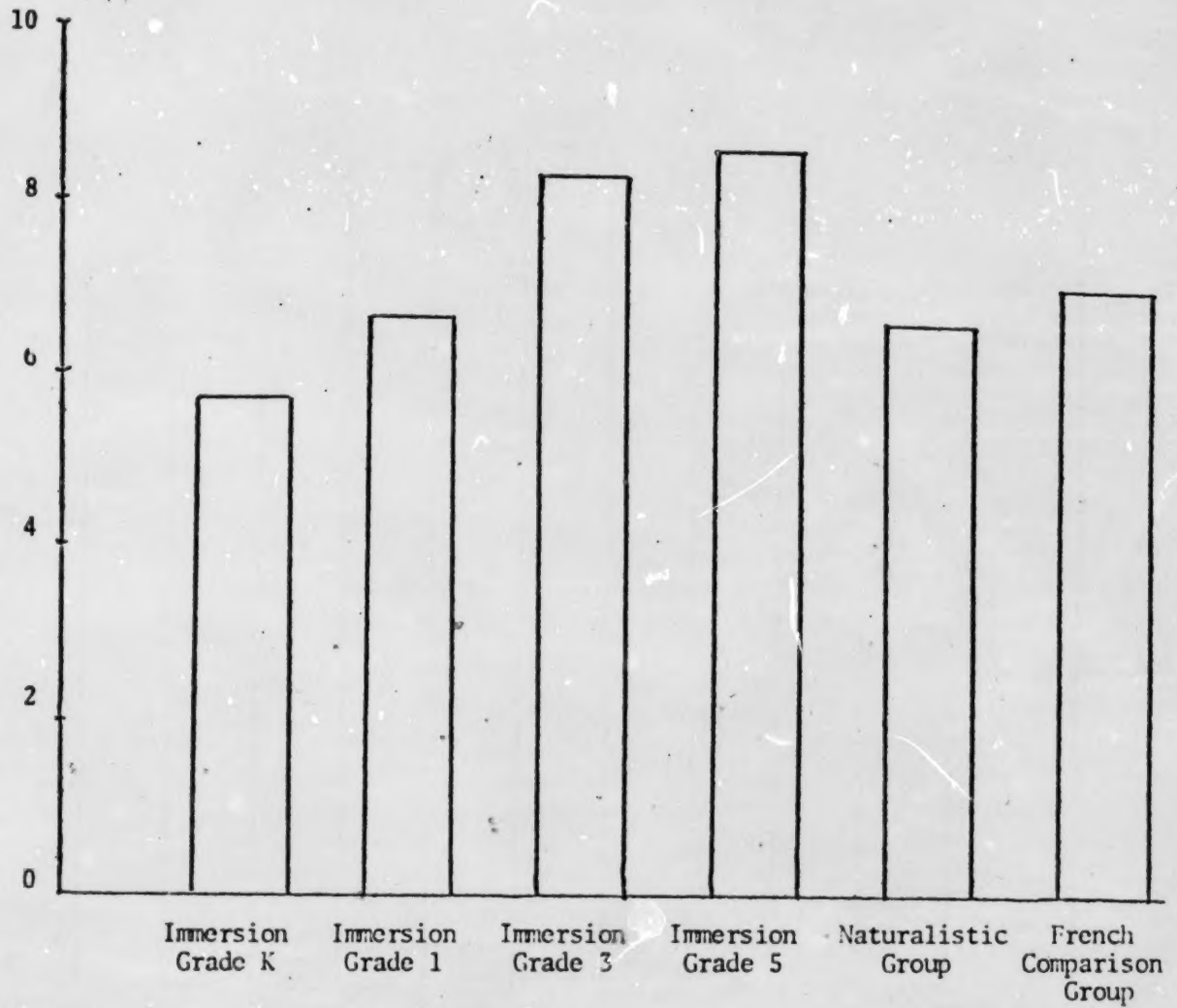
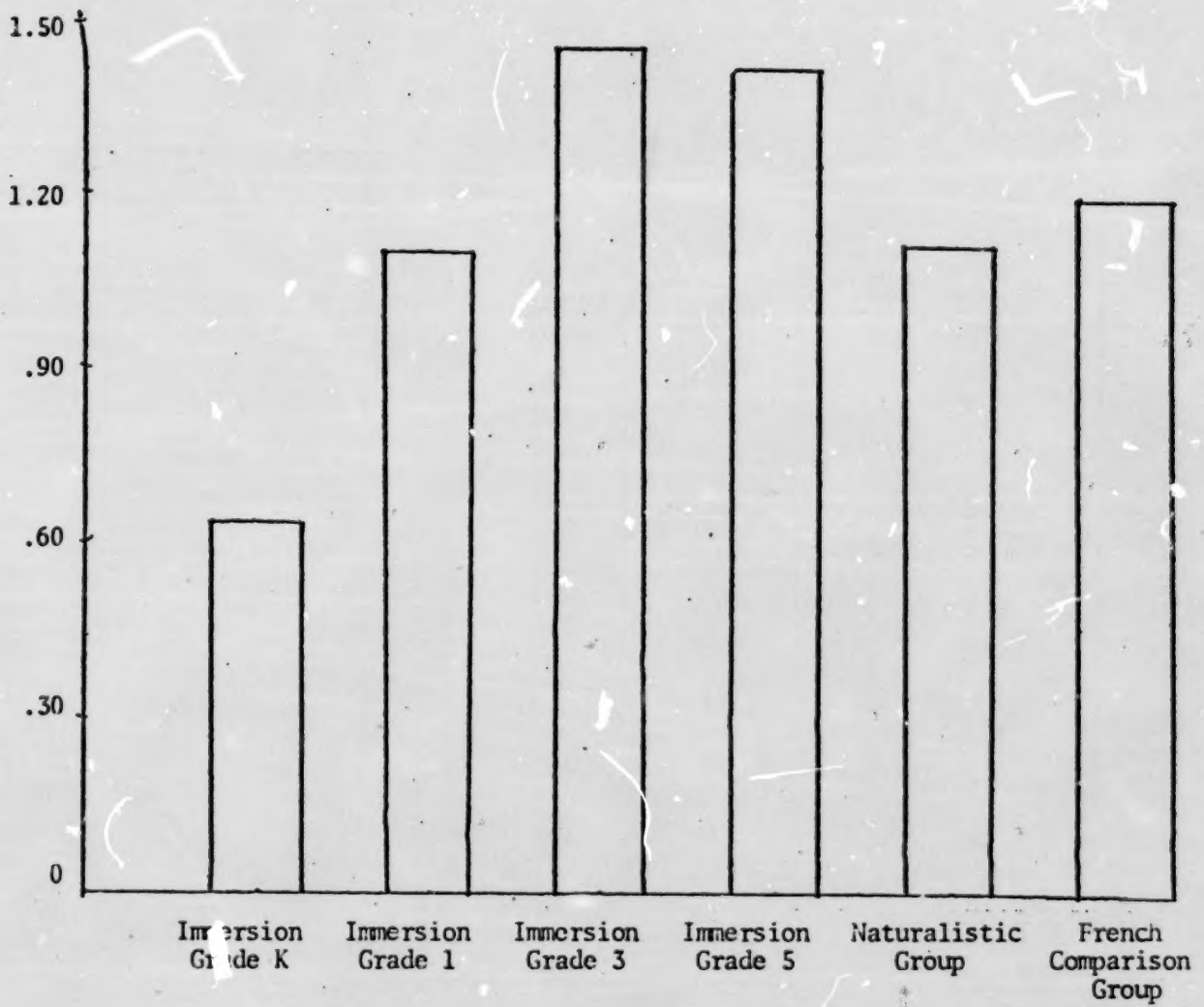
 $p \leq .000$

Figure 3: Verbs/Utterance



that the French Comparison group does not score highest on utterance complexity, however utterance complexity is related to utterance length (Pearson $r = .83$, $p \leq .001$) and the French children also had shorter utterances. The reason for this, however, may lie in the fact that the immersion children are used to "performing" in French and are giving studied "complete sentence" responses that we, as language teachers, often insist upon in the classroom, but which occur so infrequently in everyday speech!

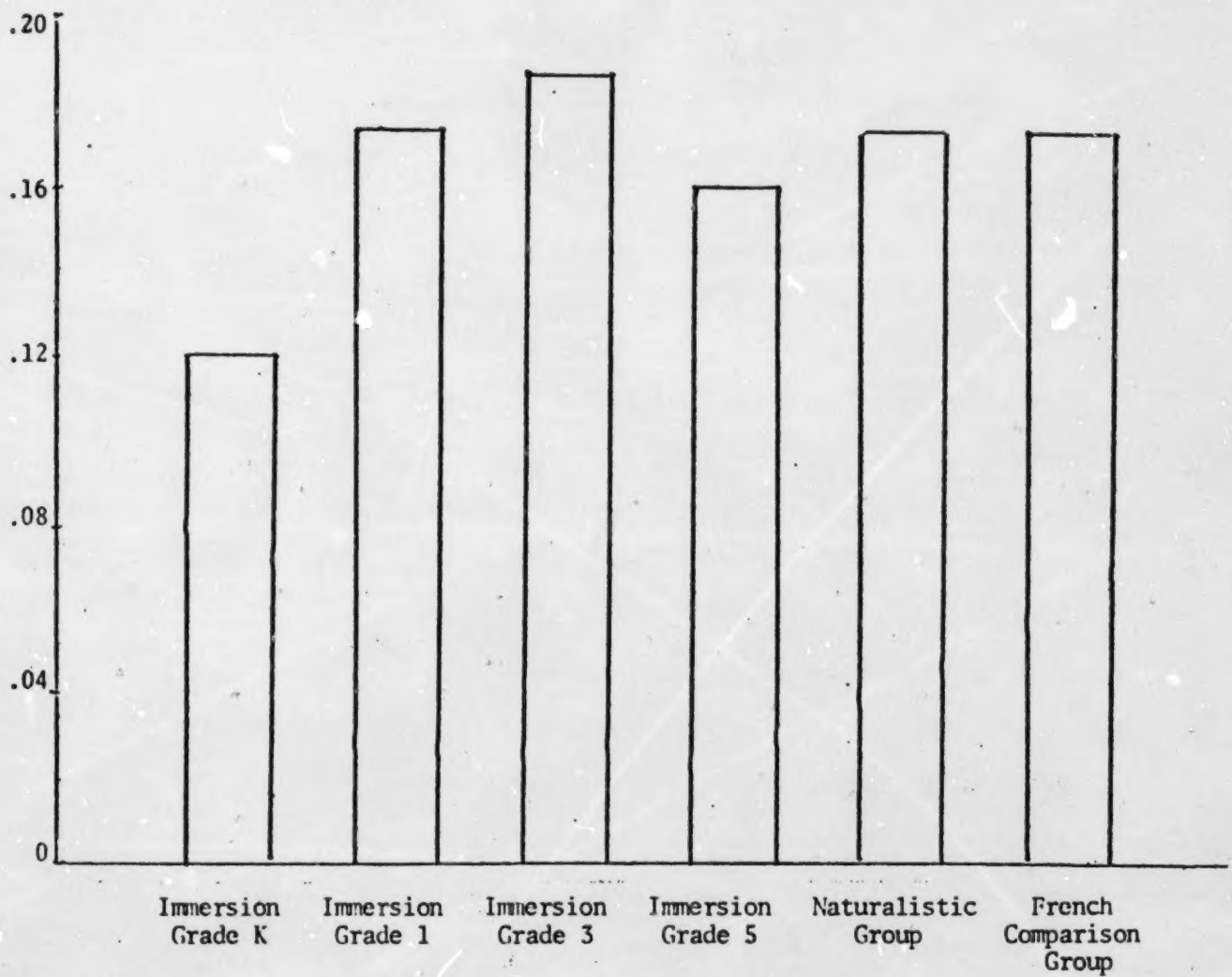
Figure 4: Verbs/Words

Though the groups are quite similar in their performance on this variable ($p \leq .06$), Figure 4 shows that the Kindergarten group performs somewhat lower than the others. All of the other groups score quite closely (between .16 and .18). Harley and Swain (1978) in their comparison of the verb use of French Immersion students, bilinguals, and monolingual French speakers in Canada, also cite about the same proportion of Verbs/words for each of their three groups and conclude that there is very little difference in percentage of verbs used by the three groups. In fact, they find more within-group variation than between-group variation on this variable.

Figure 5: Different Verbs/Total Verbs

Again, as with variable 4, the groups are quite similar in their performance on this variable. However, Grade 5 and the Naturalistic

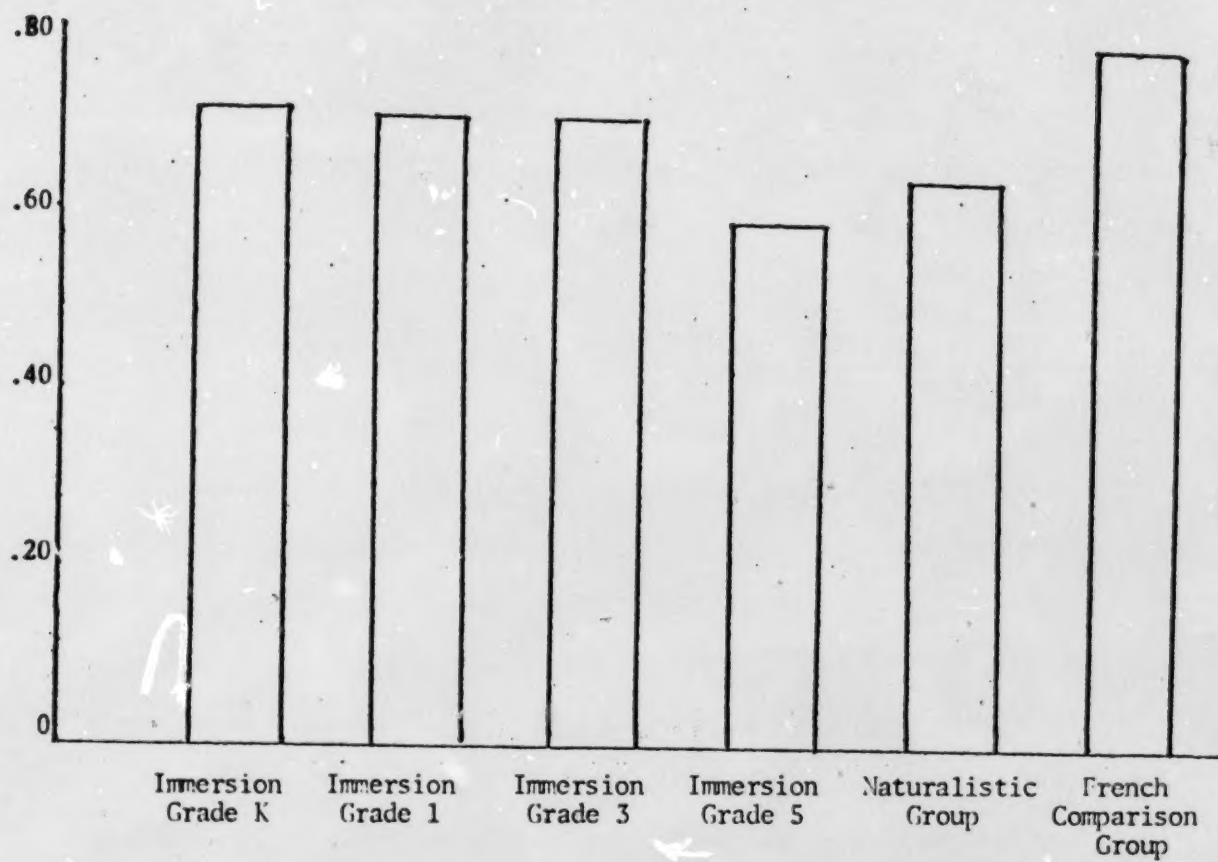
Figure 4: Verbs/Words



20

 $P \leq .059$

Figure 5: Verbs/Verbs



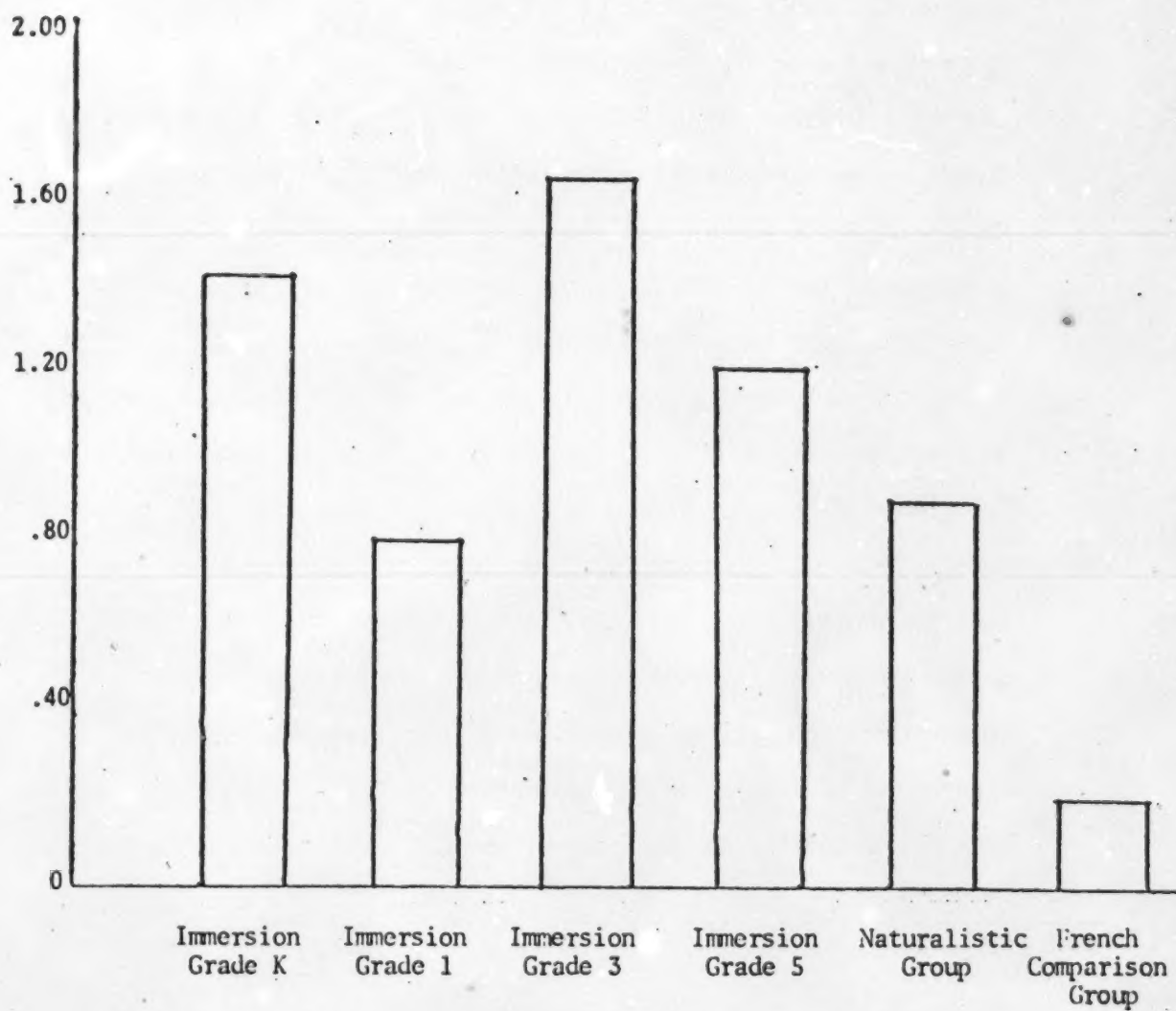
$p \leq .158$

group score slightly lower than the others, and the French Comparison group slightly higher. A partial explanation for these trends may be found in the negative correlation (Pearson $r = -.36$, $p \leq .002$) between richness of vocabulary (Different Verbs/Total Verbs) and amount said (Number of Utterances). Groups who said less tended to have a higher verb/verb ratio, since the less said, the lower the overall number of verbs used, and the lower the overall number of verbs, the higher the ratio of different verbs to overall verbs.

Figure 6: Errors/Utterance

There has been a good deal of attention given to language learners' errors in recent years in an attempt to determine strategies of language learning. Chun (1978a), in a comparison of language learners and native speakers found that the two groups were much closer in overall fluency (amount said, utterance complexity, richness of vocabulary) than in accuracy (measured in terms of grammatical errors). We find here that the groups are not at all similar in terms of mean number of errors per utterance ($p \leq .001$). The native speakers have the least amount of errors. Surprisingly, however, it is not the Naturalistic group that does second best, or even Grade 5, but the Grade 1 group (though their score is very close to that of the Naturalistic group). Again, this is probably a function of the amount said since there is a positive significant correlation between Errors/Utterance and Words/Utterance (Pearson $r = .35$, $p \leq .003$). The more said, the greater the chance of making a mistake.

Figure 6: Errors/Utterance

 $p \leq .000$

Let us examine a bit more closely the types of errors the different groups are making. Chun (1978) found in an earlier study that approximately one-third of all errors made by the Naturalistic group were due to errors in gender (article, adjective, pronoun). Lambert and Tucker (1972) found that French immersion students in Canada had problems with linking (ellipsis, liaison, contraction). Harley and Swain (1978) note the "simplified" verb system of immersion students. Table 4 shows the number of errors in each of these three categories (gender, linking, verbs) for the different groups. Though this is a preliminary analysis and certainly not an in-depth study of errors, I think it is clear from Table 4 that the groups all perform similarly in terms of linking and the verb system, but that the French children make far fewer gender errors than the non-native groups. And, although the Naturalistic group does quite well, they score closer to the immersion groups than to the French Comparison group. Though this brief look at error types gives us some insights into native/non-native differences, it does not answer the question of the relative differences between non-native groups.

Figures 7-10: Native Speaker Ratings

We see in Figure 7, as in Figure 6, a lack of similarity between groups ($p \leq .001$). In fact, this same pattern will repeat itself for all of the subjective ratings (Figures 7-10) to differing

Table 4
COMPARISON OF ERRORS BY GROUP

	Immersion Grade K	Immersion Grade 1	Immersion Grade 3	Immersion Grade 5	Naturalistic Group	French Comparison Group
Gender						
Ratio	.42	.37	.27	.34	.26	.08
Rank	1	2	4	3	5	6
Linking						
Ratio	.05	.05	.05	.09	.05	.08
Rank	4.5	4.5	4.5	1	4.5	2
Verbs						
Ratio	.19	.25	.30	.21	.25	.15
Rank	5	2.5	1	4	2.5	6

Figure 8: Vocabulary Rating

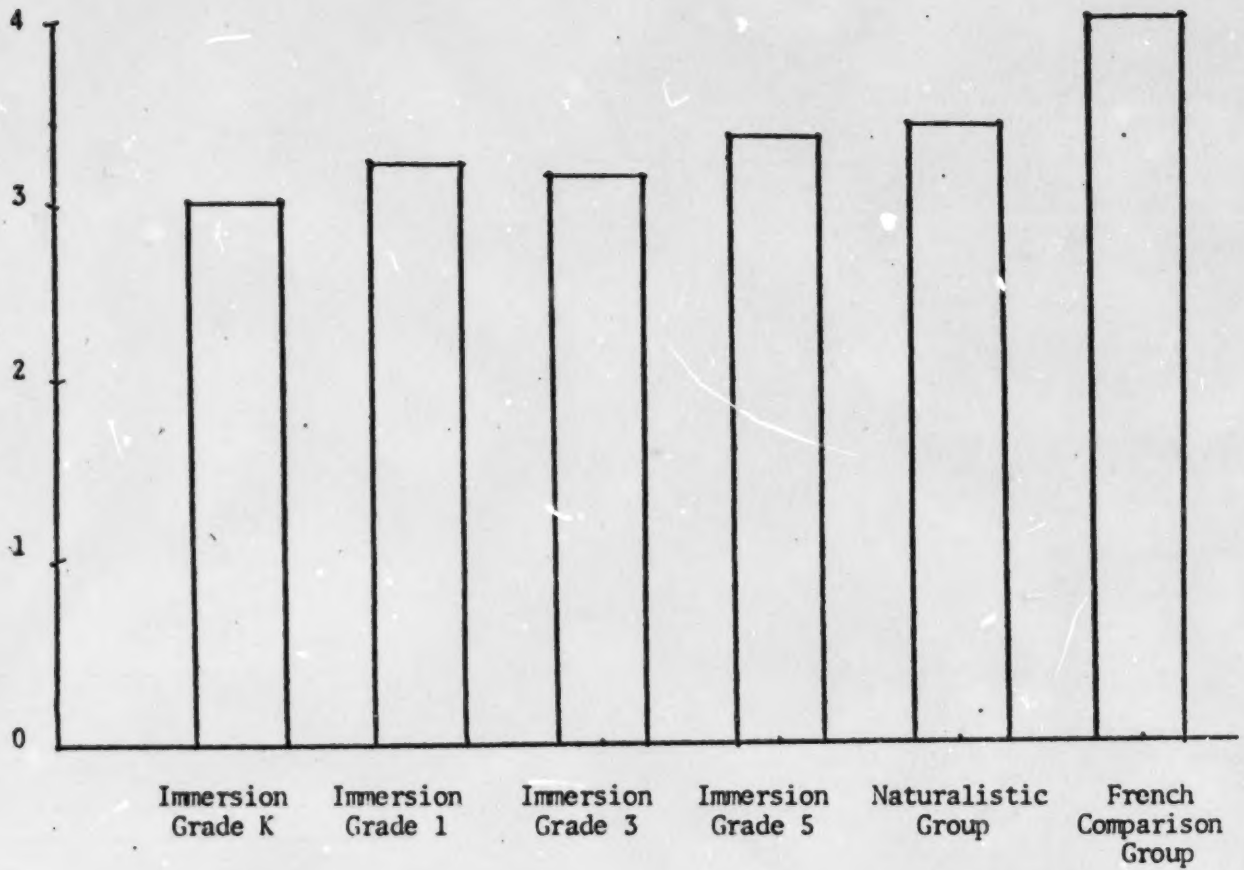
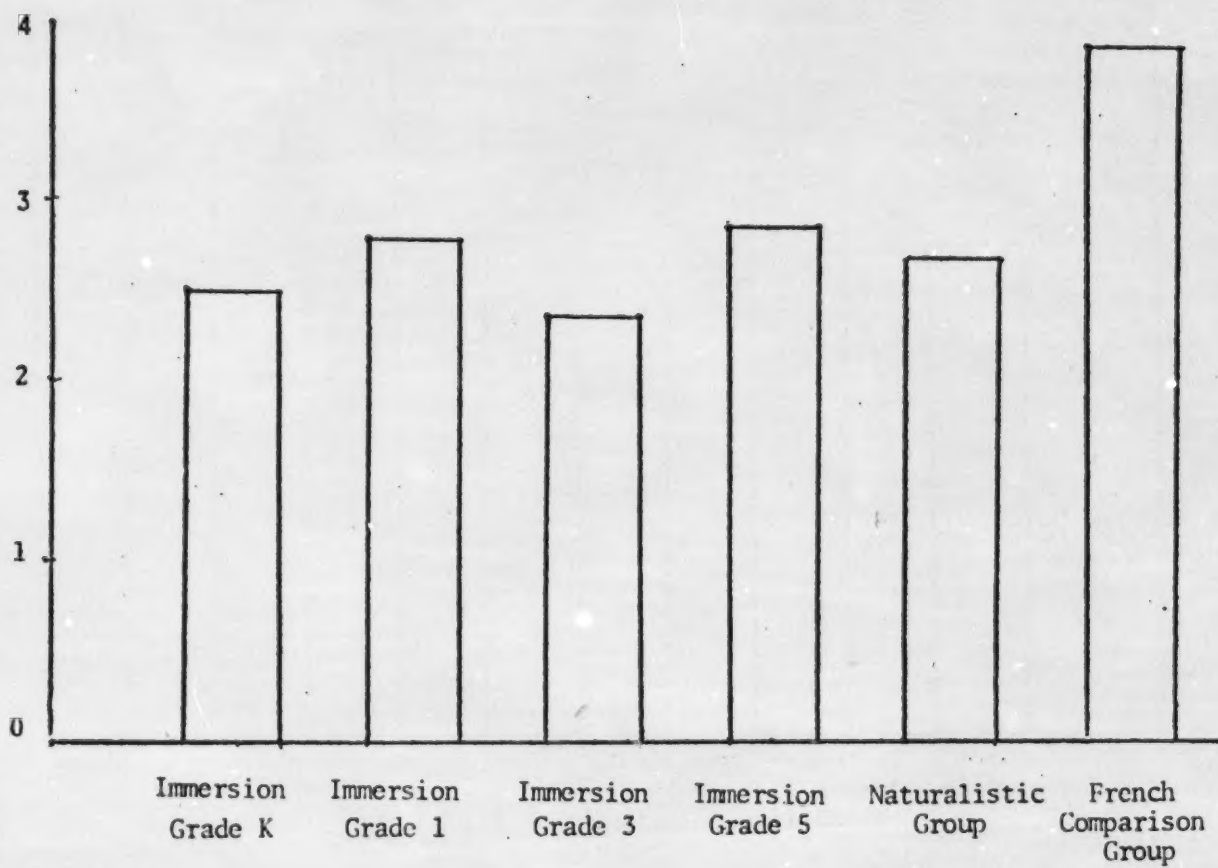
 $p \leq .030$

Figure 7: Grammar Rating



$p < .001$

Figure 9: Fluency Rating

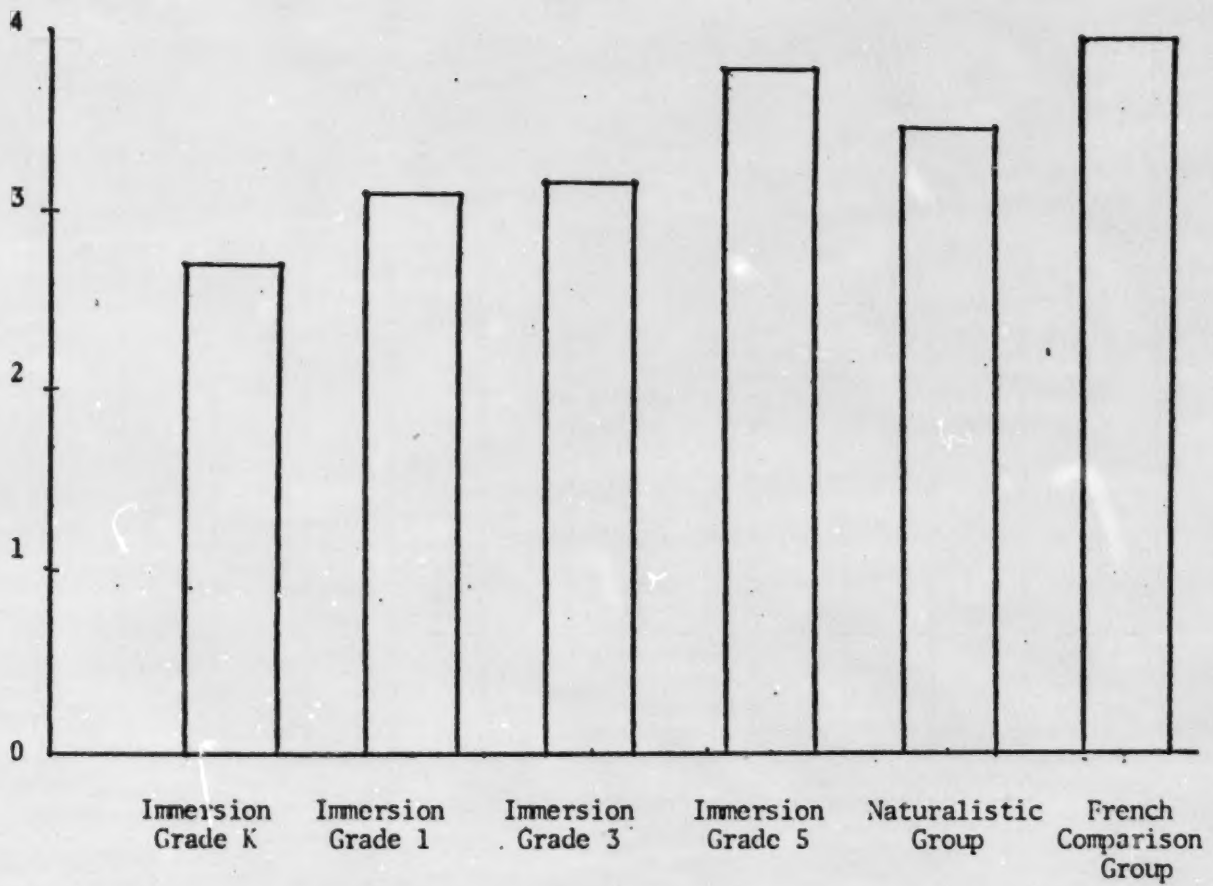
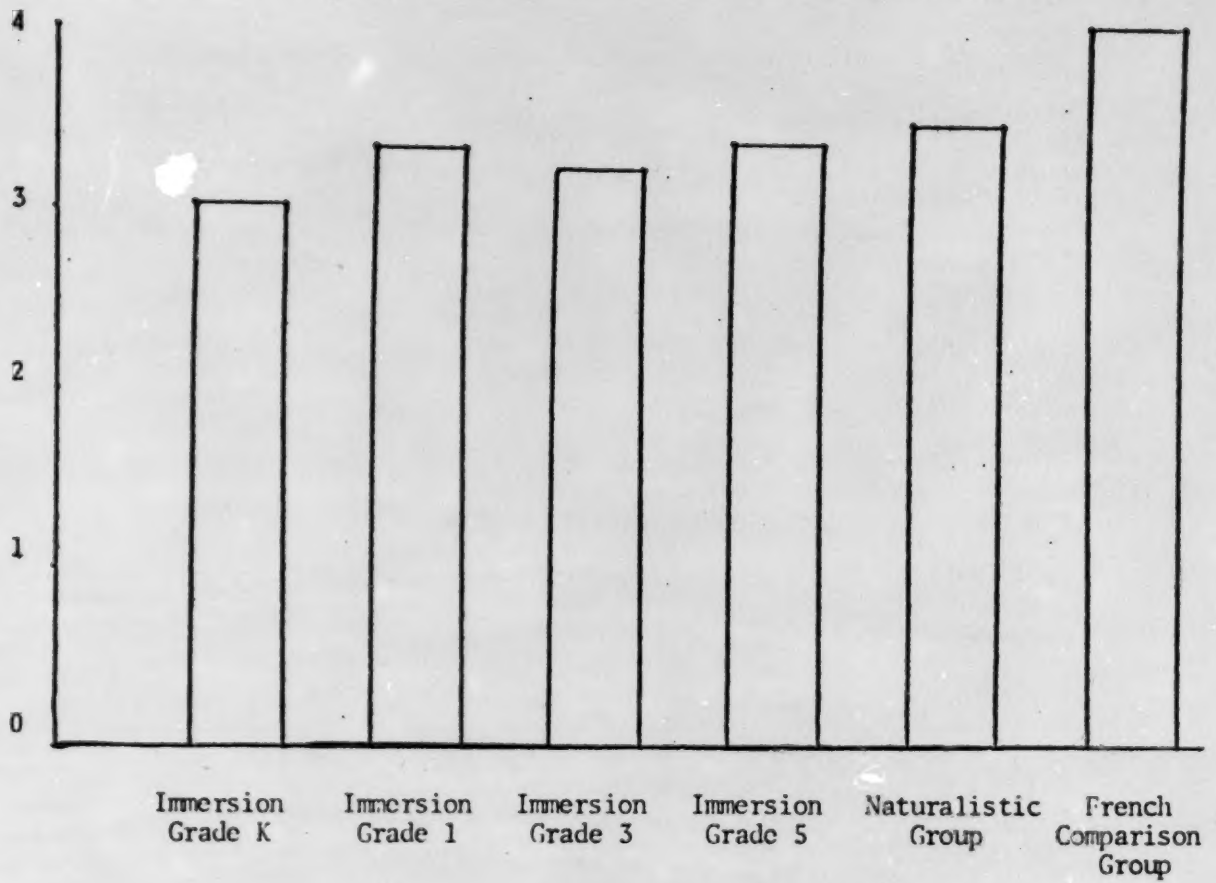


Figure 10: Pronunciation Rating

 $p \leq .008$

degrees. In almost all cases it is the French Comparison group which scores highest and the Kindergarten group which scores lowest. Furthermore, in two cases the Naturalistic group scores higher than any of the Immersion groups. This is quite remarkable when we consider that the Grade 5 group has been learning French for six years and the Naturalistic group for only one year. An examination of the variables on which the Naturalistic group scores the highest of the non-natives may provide an explanation for this finding. First of all, the Naturalistic group scores highest on vocabulary. This is not surprising if we consider that the Naturalistic group is constantly interacting with monolingual native speaking peers in a French environment, whereas the Immersion children are interacting with a single native speaker (the teacher) in a French bilingual school, but in an overall English environment (San Francisco). They have the comfort of knowing that their teacher also speaks English, and always have recourse to English if necessary. This almost certainly has an effect on vocabulary acquisition. Secondly, the Naturalistic group scores higher than the four Immersion groups on the pronunciation rating. Again, we can only attribute this finding to the situation in which the second language is learned. The Naturalistic group has much more interaction with native-speaking French peers than the immersion groups.

The Grade 5 Immersion group surpasses the Naturalistic group on both the grammar and fluency ratings. It is not surprising that the Grade 5 group should score highest of the non-natives on grammar since

they are undergoing a lot of instruction in French grammar at school. However, it is somewhat surprising that the native judge finds them more fluent than the Naturalistic group. I can only speculate that one possible explanation for the greater fluency of the Grade 5 group is that they are older than the Naturalistic group (whose ages range from 6 to 11) since the younger children in all groups were often quite hesitant to tell stories about the photographs.

In summary, let us compare the performance of the different groups across variables. Table 5 provides a summary of the ranks of the group median scores by variable. Most, but not all, of the high ranks (high scores) are obtained by the French Comparison group. The Comparison group does best on measures of richness of vocabulary, error, and all of the subjective measures. However, they are not always best in terms of amount and complexity of speech. Secondly, the Kindergarten group does worst on most of the dependent variables. Thirdly, the Naturalistic group does second best (after the native French speakers) on two of the subjective ratings (pronunciation and vocabulary) and quite well on several other measures. However, the Grade 5 Immersion group also does very well (best of the non-natives) on a number of the measures.

In conclusion, then, the groups do not all perform similarly on all of the measures (Words/Utterance, Verbs/Utterance, Errors/Utterance, Native Speaker Ratings). Furthermore, the various non-native

Table 5

RANKS OF MEDIAN SCORES ON DEPENDENT VARIABLES BY GROUP

	Number of Utterances	Words/ Utterance	Verbs/ Utterance	Verbs/ Words	Different Verbs/ Total Verbs	Errors/* Utterance	Grammar Rating	Vocabulary Rating	Fluency Rating	Pronunciation Rating
Immersion Grade K (n = 9)	4	1	1	1	5	2	2	1	1	1
Immersion Grade 1 (n = 10)	3	3	2	4	3.5	5	4	3	2	3
Immersion Grade 3 (n = 7)	1	5	6	6	3.5	1	1	2	3	2
Immersion Grade 5 (n = 13)	5	6	5	2	1	3	5	4	5	4
Naturalistic Group (n = 13)	6	2	3	4	2	4	3	5	4	5
French Comparison Group (n = 10)	2	4	4	4	6	6	6	6	6	6

*The ranks are reversed on this variable so that a low rank = high error score.

groups generally perform more similarly than the natives and non-natives, but the kindergarteners often perform less well than the other non-natives. Within the non-native groups, it is sometimes the Naturalistic group which excels (Pronunciation Rating, Vocabulary Rating), but often Grade 5 (Grammar and Fluency Ratings, Words/Utterance, Verbs/Utterance), and sometimes even Grade 1 (Errors/Utterance). What is remarkable is that the Naturalistic group does so well after only one year's contact with French. It often takes the Immersion group six years of contact to outperform the Naturalistic group (Vocabulary, Pronunciation). Furthermore, the Naturalistic group outperforms the Kindergarten group, which has had the same amount of exposure to French, on all measures except one (Richness of Vocabulary). Overall, the immersion situation and the "sink or swim" situation in which the Naturalistic group finds itself seem to have different advantages. Whereas the immersion situation may lead to increased proficiency in terms of accuracy (Errors/Utterance, Grammar Rating), the naturalistic learning situation seems to favor acquisition of a more native-like pronunciation and a good vocabulary in a very short time. Though many of these findings have been cited elsewhere (Lambert and Tucker, 1972; Harley and Swain, 1978), this paper has attempted to provide empirical verification through comparison of the immersion situation with a more naturalistic language-learning environment.

Footnotes

¹ An earlier version of this paper was presented at the 5th International Congress of Applied Linguistics, Montreal, August 1978.

² In a previous study by Chun and Politzer (1975) it was established that there were no significant differences between the performance of the "three groups." Therefore, all children, regardless of "group," have been included in the present study.

³ The author found in a previous study (Chun, 1978b) that length of stay was not related to proficiency in the second language for children of this age group. Thus, length of stay was not controlled in this study.

⁴ Two different sets of photographs were used: a set of three photographs for the immersion groups and a set of six photographs for the Naturalistic and French groups. However, both sets of photographs were in black and white and were comparable in terms of subject. For the purpose of this analysis, only the data elicited from three of the six photographs used for the Naturalistic and French groups have been

included. Thus, this analysis is based on data elicited by means of three photographs for all groups.

⁵ A developmental index was an important part of a separate analysis of the storytelling ability of the experimental group over time (Chun, in progress).

⁶ In an earlier study, Chun and Politzer (1975) analyzed MLU of the storytelling passages. For this analysis the data have been re-examined and number of utterances recounted according to separate guidelines. Words/Utterance is used here instead of MLU.

⁷ Verbs were chosen here instead of nouns or adjectives since the verb function is central to each utterance and verbs also provide information on utterance complexity at the same time.

⁸ Two subjects were deleted from the study because of insufficient data.

⁹ Bartlett's test of homogeneity of variance.

¹⁰ These differences can be substantiated through use of the Scheffe test with parametric ANOVA, since this variable, as well as several others (Verbs/Utterance, Different Verbs/Total Verbs, all Ratings), meet the test of homogeneity of variance. However, this discussion will be restricted to the results of the Kruskal-Wallis one way analysis of variance.

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